The Citrus Industry

Florida Citrus Commission Completes Reorganization

Meeting in Lakeland early in June, the Florida Citrus Commission was reorganized under the new set-up provided by legislation enacted at the recent session of the Florida legislature.

Acting upon the suggestion of Governor Warren, Dodge Taylor of Howey-in-the-Hills was elected chairman of the commission, succeeding Ollie Tillman of Lake Wales, who has served in that capacity during recent years. Also at the suggestion of Governor Warren, W. J. Steed of Orlando was named as attorney for the commission, succeeding W. P. Allen of Bartow. At this writing, June 28, no choice has been made for a general manager to succeed Marvin Walker, whose resignation becomes effective June 30, but action on this matter is expected at any time.

One promising feature of the organization meeting was the spirit of harmony which prevailed. While not all members of the commission had approved of the new legislation under which the industry must operate, there was evident a determination to work harmoniously in carrying out the provisions of the new laws.

INSURANCE

Is A Basic Need Of Every Business

And no one in Florida can deny that the production of citrus fruit is one of the biggest businesses in the state . . . As such every precaution should be taken to insure

- High Quality Fruit.
- Large Crops.
- Greatest Tree Resistance Against The Ravages of Weather And Pests.

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FERTILIZER, INC.

Old Tampa Road **Lakeland, Fla.**

The Citrus Insect Outlook For July, 1949...

J.T.GRIFFITHS & W.L.THOMPSON*
CITRUS EXPERIMENT STATION,
LAKE ALFRED, FLORIDA

Since there has been adequate rainfall over most all of the citrus areas, oil spray programs are now well under way. As suggested in the recommendations issued on June 1, citrus groves have experienced hatches of both red and purple scale during the last of May and the very first part of June. There should not be another hatch of purple scale during July. In the case of red scale, another hatch will probably occur in most groves between July 10th and 20th. These facts may be of importance in planning the final phases of the scale control programs during the month of July.

Fruit quality and degreening are factors which should be considered particularly during July. Regardless of fruit size, all early fruit, both orange and grapefruit, should be oil spayed prior to July 15th. If sprays are delayed after that date, solids may be adversely affected and longer periods will be required in the coloring room. If it appears to be impossible to get all varieties sprayed during July, plan to spray late grapefruit last. **Be sure to spray Hamlins and Parson Browns prior to July 15.**

A copper-oil emulsion spray may be desirable in groves where there has been a June bloom and little or no early bloom. In other groves where there is a partial crop of early fruit and a late June bloom as well, the regular oil spray may be applied. This is true even though the trees may be in bloom or the fruit very small in size. In former years in experimental plots, late June or early July oil sprays did not injure the late bloom or small fruits that were present when the sprays were applied. Therefore, if the late bloom represents most of the crop, use a copper oil when 2/3 of the petals are on the ground. If a good crop was set early, use a straight oil.

In the case of purple scale, the best control will probably be obtained during the first two weeks in July, and in general, the earlier in the month that the spray is applied, the better the purple scale control.

Red scale presents a slightly different problem from purple scale in July. The first week in July will be all right for red scale control measures, but where sprays are to be applied primarily for red scale control, avoid the period between

(Continued on page 9)

* Assoc. Entomologist and Entomologist, respectively.

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fmc PRESIZER
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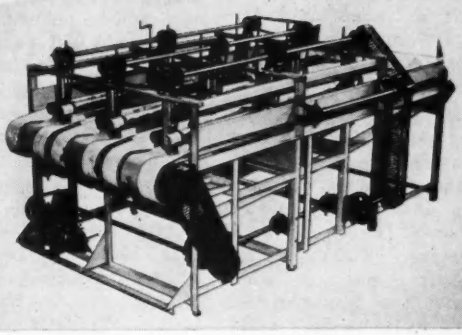

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Fast, accurate grading of fruit with the new fmc PRESIZER before or directly after it enters the packing house saves you money by reducing labor costs in handling of fruit — cannery sizes are eliminated automatically!

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The new fmc PRESIZER is scientifically engineered to require only a minimum of upkeep. There is nothing on this machine to wear out that cannot be quickly and easily replaced and at a very reasonable cost.

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Fruit runs through the new fmc PRESIZER at a rapid rate, yet it is handled so gently there is no bruising. This machine has a capacity of 1 1/3 boxes of oranges per minute per run or 1 2/3 boxes of grapefruit per run. A six-run machine will handle six to eight boxes of oranges or 10 boxes of grapefruit per minute with ease!

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Citrus Products For Fattening Cattle . . .

W. G. KIRK, E. R. FELTON*, H. J. FULFORD AND E. M. HODGES

(Excerpts from Agricultural Experiment Station Bulletin No. 454)

The Problem

Central Florida has never been self-sufficient in providing home-grown feeds for cattle. With larger numbers of improved cattle, a good feed supply becomes more important. If it can be produced economically in Florida, so much the better. In recent years there has been a tremendous increase in the production of citrus by-products, including dried citrus pulp, fresh grapefruit pulp and citrus molasses. During the 1947-48 season the disposal of cull fruit, as well as of a large surplus, presented a serious problem to the citrus industry. The cattlemen's need for energy feeds and that of the citrus industry for more diversified outlets may, through co-operation, work out beneficially for both groups if citrus by-products can go to market as high quality Florida beef.

It is estimated that 140,000 tons of dried citrus pulp and 60,000 tons of citrus molasses were produced in the 1947-48 season. Large tonnages of fresh pulp and cannery wastes have been hauled direct to feed lots and pastures. The potential amount of citrus products available is enormous and it is desirable that all information on economical methods of using it for cattle feed be obtained as quickly as possible.

Previous Work

Practical observation over a number of years has indicated that fresh grapefruit pulp and dried citrus pulp are eaten readily by all classes of range cattle. Fresh grapefruit pulp has been fed as a winter supplement to pasture at the Range Station since the 1942-43 season with good results in maintaining weights. Fresh orange pulp was not relished because of the bitter taste of the peel. After several days' exposure to sun and air the bitterness, which is due to the essential oils in the rind, was partially dissipated and the pulp was eaten readily. Recently fresh grapefruit and citrus mloasses have been fed. Beef cattle, on pasture and in dry lot, thrived when these products made up a large part of the ration but there were no published data on their value as fattening feeds.

In 1925, Neal, Becker and Arnold (6)** reported that 100 pounds of dried grapefruit refuse with 91.77 percent dry matter, and dried orange pulp with 85.05 percent dry matter, contained 75.99 and 69.55 percent of total digestible nutrients. The dried grapefruit pulp contained 1.20 percent digestible crude protein and the orange pulp 2.14 percent. They found that grade heifers fed a daily ration of 30 pounds of silage, five pounds of cottonseed meal and 15 pounds dried grapefruit pulp per 1,000 pounds live weight for 120 days were thrifty in appearance and made an average gain of over one pound per day. In this trial 54 percent of the dry matter and 60 percent of the digestible nutrients were furnished by the dried citrus pulp. The digestible nutrients required for 100 pounds gain for the four 30-day periods ranged from 426 to 612 pounds, with an average of 488 pounds. Shealy, Kirk and Crown (7) found that steers fed the same amount of ground snapped corn and cottonseed meal with either Napier grass, sorghum or sugarcane silage, required 630, 616 and 627 pounds of digestible nutrients, respectively, for each 100 pounds gain. Arnold, Becker and Neal (1) found dried citrus pulp a desirable bulky concentrate for dairy cattle.

Citrus molasses was first produced in commercial quantities in 1941. Becker, Arnold, Davis and Fouts (3, 4) estimated that it contained 1.4 percent digestible crude protein and 56.7 percent total digestible nutrients. Although citrus molasses is bitter, cattle soon learn to like it and steers fed at the Range Cattle Station ate an average of 6.5 pounds daily for 120 days.

The value of citrus by-products as feeds has been summarized by Becker, Arnold and Davis (2). Fresh grapefruit pulp, dried citrus pulp and citrus molasses are palatable and good sources of energy, but all are low in protein.

Experimental Procedure

Three dry-lot feeding trials of 120 days each have been completed at the Range Cattle Station. Eight steers were fed in 1945-46 and 10 steers in both 1946-47 and 1947-48. In every trial there was a preliminary feeding period of from seven to 10 days.

Of the 28 animals fed, 19 were yearlings and nine two - year - olds when placed on test. All the steers were at least one-half Brahman, with some Shorthorn, Devon or Hereford blood tracing back to native stock. Weights were taken on three successive days at the beginning and end of each trial and at weekly intervals throughout the trial.

All animals were fed individually and were housed in stalls four by 16 feet. The steers were allowed to exercise for a short period at intervals of from seven to 10 days. Cattle and pens were sprayed every three weeks with a 1.5 percent DDT solution to control flies.

The feeds used in each ration were as follows:

Lot 1 Hay, cottonseed meal and ground snapped corn
Lot 2* Hay, cottonseed meal and dried citrus pulp
Lot 3 Hay, cottonseed meal, two pounds ground snapped corn and dried citrus pulp
Lot 4 Hay, cottonseed meal and fresh grapefruit
Lot 5 Hay, cottonseed meal, two pounds ground snapped corn and fresh grapefruit

All steers in a trial were fed the same amount of hay and cottonseed meal. The hay was mixed Carpet, Bermuda, Bahia and Pangola grasses grown at the Range Cattle Station. In the 1945-46 trial the cottonseed meal contained 41 percent protein, in the two subsequent tests 36 percent. The hay provided roughage, always essential when citrus is fed, and the protein was necessary to balance the ration.

The ground snapped corn was a white variety of unknown origin. Grapefruit was either seedling or Marsh Seedless, picked at from six

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* Formerly Assistant Animal Husbandman, Range Cattle Station.

** Italic figures in parentheses refer to Literature Cited.

* Fed only in the 1946-47 and 1947-48 trials.

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Representing no special interest

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Florida Citrus Mutual Plans For Operations . . .

Meeting in Lakeland on June 21, members, directors and officers of Florida Citrus Mutual considered plans for putting this super-cooperative organization into effective operation. A program under which Florida Citrus Mutual can put the citrus industry on a sound credit basis was outlined by George W. Ware, a Leesburg banker, at Mutual's annual meeting.

Speaking to about 450 Mutual members, Ware also said that the citrus committee of the Florida Bankers Association, of which he is a member, had decided to recommend to the association that it continue to give its full support to Mutual.

S. R. Smith, top U. S. Department of Agriculture official from Washington, told Mutual members that volume proration was no magic formula for industry ills and that "there is no use thinking it will work unless the industry practices the fundamentals of cooperative marketing."

Other speakers outlined the growth of the canning phase of the industry, presented briefly Mutual's plans for operation for next season, and paid tribute to the men and organizations that helped bring Mutual into existence.

Directors Meet

Mutual directors elected June 10 by members reelected present officers and elected two additional vice presidents. Reelected were A. Vernon Saurman, of Clearwater, president; J. J. Parrish, Jr., of Titusville, and Earl W. Hartt, of Avon Park, vice presidents; Lacy Thomas, of Groveland, secretary; and Judge Clyde Maddox, of Wauchula, treasurer. The two new vice presidents elected were John T. Lesley, of Haines City, and C. Walton Rex, of Orlando.

Ware pointed out that banks have been uneasy about citrus loans in the past because of wide market gyrations and fears of hurricanes and freezes. Insurance protection against these hazards can he had, he said, and Mutual can arrange to provide it.

His program presented to Mutual members "on the reasoning that it would bring confidence, stability and credit into the growing, harvesting, processing and marketing of Florida's tremendous crop," contained the following points:

2-Point Program

1. Ask the government to set up a citrus corporation through the Reconstruction Finance Corporation, Commodity Credit Corporation or some other government agency and ask for a loan to create a capital fund of at least $100,000,000, or $1 a box of present Florida production.

2. The corporation capital funds would be available to Mutual to insure grower members against freeze loss or to hurricane loss of fruit or of trees, to insure a floor price slightly above cost of production with the floor price to vary according to interior quality and variety or type of fruit, and to provide a margin or loan guarantee on processed fruit so that it may be stored to be marketed throughout each month of the year.

Mutual would then contract with the corporation to carry out the following points:

1. Pool seasonal varieties, both fresh and processed, according to interior quality on an area or, if practicable, on a state-wide basis.

2. Take command of the harvesting, packing, processing, and marketing of all Mutual members' fruit; marketing all of each season's production by the time a new crop arrives.

3. Maintain quality standards to be offered under master brands for both fresh and processed fruit.

4. Not permit the processing of immature or sub-standard fruit.

Ask New Agreement

5. Seek a federal marketing agreement giving Mutual control over the harvesting, preparation and marketing of the entire Florida citrus crop.

6. Adopt a volume prorate designed to prevent the overloading of auction and other markets.

(Continued on Page 6)

City Families Spend Average of 32 Percent of Income on Food

American city families spent an average of $25.57 a week for food or 32 percent of their total weekly income in the spring of 1948, reports the Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture, from a survey of 1,600 households in 68 cities, large and small. The survey is part of a broader study which will furnish the most detailed record of family food habits in urban areas since the end of the war.

The survey shows that a larger part of income went for food in 1948 than in 1942 when comparable data were gathered. In 1942, urban families averaged $14.23 for food or 26 percent of their weekly income. The bigger postwar food bills have gone partly into higher prices, partly into larger purchases. Higher consumption of such foods as milk, fruits, and vegetables — including citrus fruit and tomatoes — eggs, and meat, poultry, and fish indicate that the family's food money bought better nutrition in 1948 than in the early war year.

Conducted under the Research and Marketing Act, the survey included urban housekeeping families in 34 states. To show seasonal and geographical variations, winter, spring, and autumn surveys of food spending were also made in four cities—Birmingham, Buffalo, Minneapolis-St. Paul, and San Francisco. The fact-gathering is being continued by a survey of food spending this spring and summer in Birmingham and Minneapolis-St. Paul.

Facts gained from the survey will be useful to the food industry, all the way from farmer to retailer, as well as to home economists and educators. Up-to-date information on family food habits are wanted for improvement of food marketing and eudcation for better nutrition.

The much larger share of income spent for food by families in the lower income groups is shown by the following figures from the survey: Families with incomes of $7,500 or more, which had the largest average family size, spent $44.08 a week for food, or 17 percent of income. Families with $3,000-$4,000 income spent $27.06 for food or 35 percent of income. Families with incomes under $1,000, many of which were **small** families, spent $13.76 a week for food or 74 percent of income.

Quantities Reflect Incomes

Frozen fruit and vegetable purchases showed the influence of income more than any other groups of foods. The larger size of the higher income families would account in part for bigger food purchases, but families with incomes of $7,500 or more used 10 times as many frozen fruits and vegetables as did those with incomes under $2,000.

Purchases of canned fruits and vegetables, soups, prepared, and partially prepared dishes increased as income rose to $4,000, then buying of these foods leveled off or declined.

Families with $7,500 or more income used twice as much milk or its equivalent in milk products as households in the under — $1,000 group — 20 quarts per week compared with 10.

The higher income families used an average of 13.9 pounds of meat, poultry, and fish per week compared with 7.5 pounds used by the lower income group.

Over-$7,500 families used 17.8 pounds of fresh fruit per week compared with 5.8 pounds used by under-$1,000 families.

In the highest income groups consumption of fresh vegetables averaged 13.8 pounds a week, compared with 7.5 pounds at the $1,000-$2,000 level. Potatoes and sweetpotatoes increased by 70 percent from the under-$1,000 to $4,000 income levels and then declined, so that families in the $7,500 bracket were using about the same amount as the $1,000-$2,000 group.

Households with under $1,000 incomes used an average 15 eggs per week compared with 24 in the middle income groups and 28 in the $7,500 and over.

The amount of grain products that families consumed, including that in bakery products purchased varied little with income. Bakery products alone increased as income rose to $4,000, then declined.

Families with higher incomes used only slightly more sugars and sweets and fats and oils than the lower income groups.

Compared with 1942

The influence of income on food purchases was about the same in 1948 as in 1942, except for two food groups. Compared with the higher income groups, lower income families were consuming more citrus fruit and tomatoes and more meat, poultry and fish in the postwar year than in 1942.

Compared with the spring of 1942 those urban families in all the income groups were using in their homes **8 percent more citrus fruit** and tomatoes in 1948, 21 percent more of other vegetables and fruit —not including leafy, green, and yellow vegetables, 23 percent more milk, 12 percent more meat, poultry, and fish, 11 percent more eggs, and 49 percent more sugar and sweets. Sugar rationing which began in 1942 reduced abnormally the use of sugar and sweets that year.

Quantities used of potatoes and sweetpotatoes declined 18 percent. This was the only food group which decreased in use among town and city families in 1948 as compared with 1942. Consumption of the leafy, green, and yellow vegetables remained about the same.

Florida Citrus Mutual Plans For Operations

(Continued from Page 5)

7. Refuse to sell large quantities of fresh or processed fruit to brokers or others for excessive speculative purposes.

8. Budget the selling of both fresh and processed products so that they may be distributed to consumers on as nearly as possible an even monthly or weekly basis.

Brand Advertising

9. Do brand advertising rather than commodity advertising and do it on a very much enlarged scale over the commodity advertising heretofore done.

10. Continue research in citrus in all its phases on an enlarged scale, because it is recognized that the laboratory is responsible for the new uses and new processes.

11. Make an assessment or retain on a percentage basis on each box of fruit or its equivalent, marketed, with the retain to be designed to

raise not less than $10,000,000 nor more than $30,000,000 a year.

12. The retain to be paid over to the corporation to be used, first, to pay all insurance, floor price or loan guarantee losses, and next, to repay the government for the loan of the initial capital invested in the corporation.

"You members of Mutual," Ware said, "Can put citrus on a sound credit basis. No other organization in sight can do anything about it. Mutual can make Florida citrus the bonanza crop of the nation. It's a challenge to you."

Take No Action

Directors took no immediate action on the proposal, but will consider it in further studies of Mutual's operating plans for next season.

Smith, in warning that volume control was no magic formula, said it involves applying advanced phases of cooperative marketing to all the industry.

"There's no use thinking it will work," he said, "unless the industry practices the fundamentals of cooperative marketing.

"I'm not saying it can't be done in Florida, but volume control is no cure-all. Ways must be devised to withhold any surplus fruit from trade channels. Benefits of volume control on fresh fruit would be decreased until there was some control on movement of citrus to canneries."

Calls For Quality

In discussing the rapid development of the frozen concentrate phase of the industry, Smith said the manufacturers of the new product "have got to maintain their high quality standards" if they are to continue to expand and to maintain the popularity of the product.

Judge Maddox, Mutual's treasurer, reported today that a total of $97,792 had been collected from various sources to run the organization, and that nearly $10,000 was on hand now. A little over $10,000 he said, has been collected from a voluntary assessment request to members of $1 per 10 acres or fraction thereof.

W. W. Giddings, of Winter Haven, outlined the rapid growth of the canning phase of the industry, and pointed out that frozen concentrate manufacturers put up 9,700,000 gallons of the product through June 11 of this season, compared with 1,900,000 gallons last season.

Saurman in his report urged that the membership campaign be continued in an effort to get 90 per cent of the state citrus crop into Mutual, compared with the present 80 per cent that it now has. He said the financing of Mutual had been difficult to date, and added that next season's assessments on members' fruit probably would not be over a half-cent a box.

Jim Morton, of Auburndale, who led Mutual through its early membership drive activities, thanked the many individuals and organizations who helped in the campaign, and presented watches as tokens of esteem to Mutual's first two presidents, Latt Maxcy, of Frostproof, and C. Walton Rex, of Orlando. W. C. Pedersen, of Waverly, accepted Maxcy's present for him since he was out of the state at the time.

CITRUS PRODUCTS FOR FATTENING CATTLE

(Continued from Page 4)

to 10-day intervals and quartered as used.

Steers were fed twice a day at 8:00 A. M. and 4:30 P. M. The cottonseed meal was mixed with the dried citrus pulp and poured over the fresh grapefruit at feeding time and the hay was given after the morning feeding.

During the trials all steers had access to a mineral mixture. The amount of some of the ingredients was changed over the three - year period as it was found advisable, either for nutritive reasons or because of the cost, to altar the formula. The mineral mixtures were made up as follows:

	1945-46 Pounds	1946-47 Pounds	1947-48 Pounds
Steamed bonemeal	52.00	26.00	29.00
Defluorinated superphosphate	—	26.00	29.00
Common salt	33.89	33.89	34.22
Red oxide of iron	3.39	3.39	3.42
Copper sulphate	0.68	0.68	0.34
Cobalt chloride	0.04	0.04	0.02
Cottonseed meal	5.00	5.00	2.00
Blackstrap molasses	5.00	5.00	2.00
TOTAL	100.00	100.00	100.00

Rib cuts, consisting of the 9th, 10th and 11th rib from each side of the carcass, were taken for physical, chemical and cooking tests. The data on the meal will be published later.

Experimental Results

Three feeding trials with steers in dry-lot have been completed. No difficulty was experienced in getting the steers to eat citrus feeds.

The average initial weight of the steers fed in the three trials varied considerably. A yearling and a two-yearold steer were used in each lot in both the first and third trials and only yearlings in the second trial, which partly accounts for the difference.

The average daily gains ranged from 1.85 pounds for steers fed fresh grapefruit to 2.99 pounds for the steers receiving dried citrus pulp plus two pounds of ground snapped corn, both in the first trial.

Lot 2, fed dried citrus pulp as a fattening feed, had the lowest average daily gain in the 1946-47 trial, 1.94 pounds, and the highest in 1947 - 48.. 2.47 pounds. The pulp used in 1946 varied in quality and feed consumption was less consistent.

Comparing the steers that received fresh grapefruit with those fed fresh grapefruit plus two pounds of ground snapped corn, there was a difference in gain of 0.17 pounds daily in favor of the steers fed corn. The addition of corn to either the grapefruit or dried pulp ration resulted in less fluctuation in feed intake and more uniform gains.

It required a period of 50 to 60 days to get the individual steers on full feed. Increasing the fattening ration too rapidly invariably resulted in animals going off feed. In general, feed consumption was highest during the first 60 to 90 days, and less feed was required for gains than for the last 30 days.

Of particular interest was the consumption of grapefruit by individual animals and the averages for the steers on this feed. One steer ate from 60 to 64 pounds of fresh fruit daily for a seven-week period beginning on the 54th day of the test, with an average intake of 48.38 pounds, while the average for the six steers on this ration was 39.778 pounds. Throughout the trials only one animal was affected adversely by any of the rations. This steer, on fresh grapefruit, had an occasional digestive disturbance characterized by slight bloat and temporary refusal of feed. The distention usually subsided in 15 to 20 minutes, after which the feed was entirely eaten.

The fresh grapefruit contained 13.64 percent dry matter, so steers consuming 39.78 pounds per day received 5.43 pounds dry matter. The high water content of the grapefruit, 86.36 percent, made it impossible

for steers to eat sufficient nutrients to make gains comparable to those fed dry rations.

All steers in a trial received the same amount of hay and cottonseed meal but in some instances there was a slight refusal..

Coefficients of digestibility as given by Shealy, Kirk and Crown (7) were used for ground snapped corn. Coefficients for hay and cottonseed meal were obtained from Morrison's Feeds and Feeding (5), and for dried citrus pulp from Neal, Becker and Arnold (6). Since there are no digestion coefficients for fresh grapefruit, those of dried grapefruit pulp (6) were used.

The dry feeds contained almost six times the total digestible nutrients found in fresh grapefruit. The high water content of fresh grapefruit, 86.36 percent, limited the nutrient intake of Lots 4 and 5. The steers on grapefruit drank less water but it was more difficult to keep them well bedded. Frequent physical examinations when seedling fruit was used failed to show any whole or parts of seeds in the feces, which indicated that seeds as well as pulp were being utilized.

The steers fed ground snapped corn needed the most nutrients, 539 pounds, and those fed grapefruit the least, 456 pounds. The lot receiving grapefruit plus two pounds of corn required 457 pounds. Steers fed dried citrus pulp consumed 484 pounds of total digestible nutrients for 100 pounds gain.

One hundred pounds of the mineral mixture eaten by the steers in the three trials had an average total digestible nutrient content of five pounds, thus the amount obtained from this source per 100 pounds gain ranged from 0.75 for Lot 3 to 1.1 pounds for Lot 4.

The steers on the dry rations in the three trials obtained more nutrients from the fattening feeds and less from the hay and cottonseed meal, 65.5 and 63.8 percent for Lots 1 and 3, compared to 31.1 from grapefruit, Lot 4, and 55.1 from corn and grapefruit, Lot. 5. In the second and third trials Lot 2 obtained 56.5 percent of their nutrients from dried citrus pulp.

Animals used in all trials had been given access to a mineral mixture since birth, hence there was no reason to believe that they suffered any deficiency. However, as soon as the mineral mixture was placed in the boxes, usually a pound at a time, it would be consumed within a few hours. In the third trial each animal was limited to two pounds a week, as it was estimated this would meet its needs. The steers in every trial gnawed the edge of their stalls and ate earth from the floor of the pens as well as licking earth when turned out in the exercising yard. Throughout the trials all steers appeared to be in excellent thrift and no abnormalities were observed at time of slaughter which would indicate a lack of mineral.

Of the 28 steers, three graded choice, 18 good and seven commercial. Carcass grade depended upon quality of animal used in the trials and degree of finish when slaughtered. Quality and flavor of meat from animals of the same grade were uniformly good, whether the feed was ground snapped corn, dried citrus pulp or grapefruit.

Summary

Three feeding trials of 120 days each to test the fattening value of dried citrus pulp and fresh grapefruit for cattle have been completed. Twenty-eight steers with 50 percent Brahman blood were fed individually the fattening rations of ground snapped corn; dried citrus pulp; dried citrus pulp and two pounds of ground snapped corn; fresh grapefruit plus two pounds of ground snapped corn. In each trial all animals received the same amount varied for the three trials.

All rations were palatable and there was little difficulty in keeping the steers on full feed. The animals were sleek and glossy and appeared healthy in every respect.

The lot fed ground snapped corn made an average daily gain of 2.37 pounds, requiring 539 pounds total digestible nutrients. At the current price of corn this was the most expensive ration.

Dried citrus pulp in two trials produced gains of 2.17 pounds a day and required 466 pounds total digestible nutrients for 100 pounds gain.

The steers fed dried citrus pulp and two pounds of ground snapped corn made daily gains of 2.53 pounds with a total digestible nutrient requirement of 484 pounds.

Fresh grapefruit was eaten readily. The daily gains on this ration were 1.98 pounds, and with the addition of two pounds of ground snapped corn they were increased to 2.15 pounds. The total digestible nutrient requirement was 456 and 457 pounds, respectively.

Recommendations

Grade steers of good feeder conformation and quiet disposition weighing from 550 to 700 pounds can be fattened satisfactorily on a ration of hay, cottonseed meal, mineral mixture and either dried citrus pulp or fresh grapefruit. The citrus feeds furnish energy nutrients, hay supplies bulk, cottonseed meal protein balance, and the mineral mixture elements essential for the animal body.

Feed cattle in groups; from 10 to 20 in dry lot where they are to be fed twice daily, and in larger numbers on pasture where self-fed. Unruly cattle should be removed and all sharp horns tipped.

Good gains can be secured on an average daily ration of:

Five to seven pounds of hay
Three pounds cottonseed meal
Eight to nine pounds dried citrus pulp or
40 to 50 pounds fresh grapefruit.

At the beginning of the feeding period use more hay and less of the citrus feeds. Gradually decrease hay and increase citrus until the cattle are on full feed.

In dry lot feeding exercise care that feed does not spoil in the bunks. Dried citrus pulp and cottonseed meal can be mixed and fed in bunks, and there is less waste if hay is fed from racks. Well grown cattle can eat whole grapefruit but for young animals it is advisable to quarter or slice the fruit before putting it in the bunks.

If cattle are fattened on pasture the quality of the grass will determine the amount of fattening feeds required. Grass will replace hay in the ration. Whole grapefruit and cottonseed pellets can be spread on the ground if there is a good sod, or bunks may be used.

When fattening cattle in dry lot or pasture they should be:

(1) Cared for and fed regularly.
(2) Supplied with plenty of fresh water.
(3) Given a good mineral mixture.

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Acknowledgments

Acknowledgment is made to Dr. A. L. Shealy, Dr. R. S. Glasscock, Dr. George K. Davis, Kingan and Co., Bartow and Tampa, and Mr. R. B. Campbell, Wauchula, for help given in the course of these feeding trials. The assistance of many members of the Agricultural Experiment Station and of Mr. O. C. Coker and Mr. H. C. Howze, who cared for the experimental animals, is appreciated greatly.

THE CITRUS INSECT OUTLOOK FOR JULY, 1949

(Continued from Page 3)

July 10th and July 20th. In most groves, red scales will be laying eggs at that time. July 20th should see most of the hatch accomplished, and sprays applied during the last **10 days** in the month will be satisfacfactory. In this way, growers will avoid spraying during the time when a maximum of eggs are being laid. There may be some variation in individual groves and growers may ascertain the situation in their particular acreage by carefully examining the stages of living scales which are found on foliage and fruit.

In many groves it has been noted during June that rust mites have increased and that they are present in considerable numbers. In some instances it has been necessary to apply dust or spray in order to prevent rust mite injury. It is to be expected that there will be increases in rust mites sometime three to four weeks after the application of most oil sprays. As a result, checks should be made and the growers should be prepared to apply sulfur for the control of rust mites. During 1948 considerable burn was experienced from the use of sulfur spray and dusts. Completely adequate safeguards cannot be suggested; however, it has been observed during the past years that less injury followed wettable sulfur sprays than sulfur dust. This is due to the fact that sulfur dusts are very often gobbed on the fruit; whereas, the sprays have a more even distribution and, therefore, burn is less apt to occur. Lime-sulfur is not recommended for general use at this time of the year.

Sulfur sprays should not be closer than three weeks to oil sprays. This is a particularly important fact to observe and growers should apply extreme care in spacing sulfur applications so that they will not be too close to the oil spray; otherwise, excessive injury may occur.

For more specific information consult the Citrus Experiment Station at Lake Alfred, Florida.

MANGO FORUM JULY 6TH IS SLATED FOR MIAMI

The Florida Mango forum is slated to be held at Miami Edison High School, July 6th ,beginning at 10:30 in the morning, according to Miss Olga Kent, assistant home demonstration agent and secretary of the group.

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PREPARING FOR ACTIVE SERVICE

Florida Citrus Mutual, Florida's super-cooperative and the largest such organization of citrus growers anywhere, is actively preparing to serve the citrus growers of the state in the season soon to come and in the years to follow. With a membership of more than 6,000 growers and a signed tonnage in excess of 80 percent of the state's citrus production, Mutual needs only the hearty cooperation of the individual members. That such cooperation will be forthcoming seems assured when it is considered that of the 21 members of the board of directors, 19 were re-elected at the recent district elections and the two not so honored were not candidates for re-election. Then, to make the approval unanimous, the directors promptly re-elected the entire roster of officials.

Thus Mutual starts out on its first year of operation under what appears to be the most favorable circumstances. It is the one organization which holds out promise of better conditions for the industry in both fair and foul weather.

The primary purpose of Mutual, the object for which it was formed, is to secure more adequate prices for the product of Florida groves. To this end every possible avenue will be explored, from the production of highest quality fruit to the control of distribution and the encouragement of research into new avenues for the production of by-products.

Mutual has brought together within its membership hitherto conflicting interests now welded into one progressive and aggressive organization. Much will be expected of Mutual — we sincerely hope and confidently believe that much will be accomplished.

THE CITRUS SEASON CLOSES

The citrus season of 1948-49 is practically at its end. Most of the packing houses are closed or about to close for lack of fruit with which to operate. The same is true of most processing plants.

The season which started out under a cloud of depressed prices and in a spirit of gloom on the part of the growers, ends with phenominally high prices and a spirit of confidence prevailing among growers. True, nature must be given credit for much of the climbing prices. Freezes in both California and Texas operated to curtail competition from those states. At the close of the season Florida oranges were outselling California fruit in the auction markets for the first time in many years, while grapefruit prices attained almost unheard of altitudes in the markets.

With only average, or less than average production in Florida this coming season and with less than normal production in competing states, the outlook for the price situation for the oncoming Florida crop is most encouraging. Texas, it is anticipated, will produce no more than 15 percent of a normal crop of grapefruit, which will leave Florida practically free to supply the market. This shortened supply should stimulate prices to a point where Florida growers may anticipate a profitable season — unless nature should reverse its tactics and turn its attention to Florida.

Not in many years has the shipping season for Florida citrus fruits closed with growers feeling so confident as at present, nor for many years have the growers put forth greater effort to see that everything possible is done to assure the high quality demanded by discriminating consumers.

HAROLD HUME RETIRES

With the retirement on June 30 of H. Harold Hume as provost for agriculture and Dean of the College of Agriculture at the University of Florida, the state will lose the services of one of the outstanding horticulturists of the nation.

For nearly half a century Mr. Hume has been actively connected with the horticultural and agricultural interests of Florida, twenty of these years in active service at the University. In his retirement from active service, the University and the horticulture and agriculture of Florida sustain a definite loss.

MARVIN WALKER LEAVES FLORIDA CITRUS COMMISSION

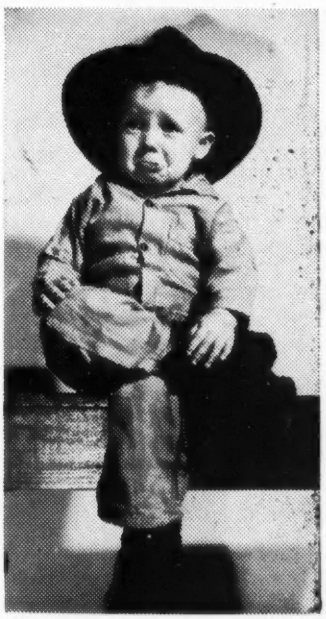
Marvin Walker, general manager of the Florida Citrus Commission, has tendered his resignation, becoming effective on June 30, to become assistant to the president of Florida Citrus Canners Cooperative at Lake Wales.

Mr. Walker has been prominently connected with the citrus industry of Florida for the past thirty years, serving the industry in numerous important capacities. He had on several occasions served the Florida Citrus Commission as advertising manager, secretary, and more recently as general manager. Few men in the state are more intimately acquainted with the citrus interests of Florida than Mr. Walker.

Summer rains which followed the prolonged drouth of the early spring have brought out in many sections of the citrus belt a heavy June bloom. Some growers believe that this late bloom may go far toward making up for the scarcity of early bloom in some groves and the droppage of some early bloom fruit as a result of the prolonged drouth.

Children's Home Campaign Four-Fifths Of Goal

The many friends of and contributors to the great State-wide, Non-Sectarian Services of The Children's Home Society of Florida, which during the past forty-seven years has extended its aid and care to well over fifty-four thousand orphan, homeless and needy children of all ages, all creeds, from every county in the



entire State, will be pleased to learn that the current "Direct Letter of Appeal" campaign to raise $450,000.00 to erect four badly needed new, modern Receiving Home Buildings in South Jacksonville is progressing very favorably.

Announcement has just been made by the long time State Superintendent Marcus C. "Daddy" Fagg, that a total of $360,863.42 had been received from bequests, memorial gifts, securities, cash and pledges up to June 15th.

This leaves a balance of $89,-136.42 still to be contributed. In speaking of the progress of the campaign "Daddy Fagg" writes as follows: "We are greatly encouraged by the fine response received up to date, and feel confident that if everybody that can give, even a small amount, will send in their gfits and pledges that we will be able to close the campaign successfully within the next thirty days.

We are particularly indebted to the newspapers of the State for their marvelous support, also to Radio Stations, and to our fine Sponsoring Committee all over Florida, who are urging their members and friends to give.

We hope the citizens of Florida will remember that this is the first

(Continued on Page 13)

THE RAINS HAVE COME...

But rains alone will
not grow the kind of fruit
that pays you a profit!
If you want to grow the best
"TASTE TEST" quality fruit,
be sure your groves have
enough plant food!
NACO 5-Star Brand Fertilizers,
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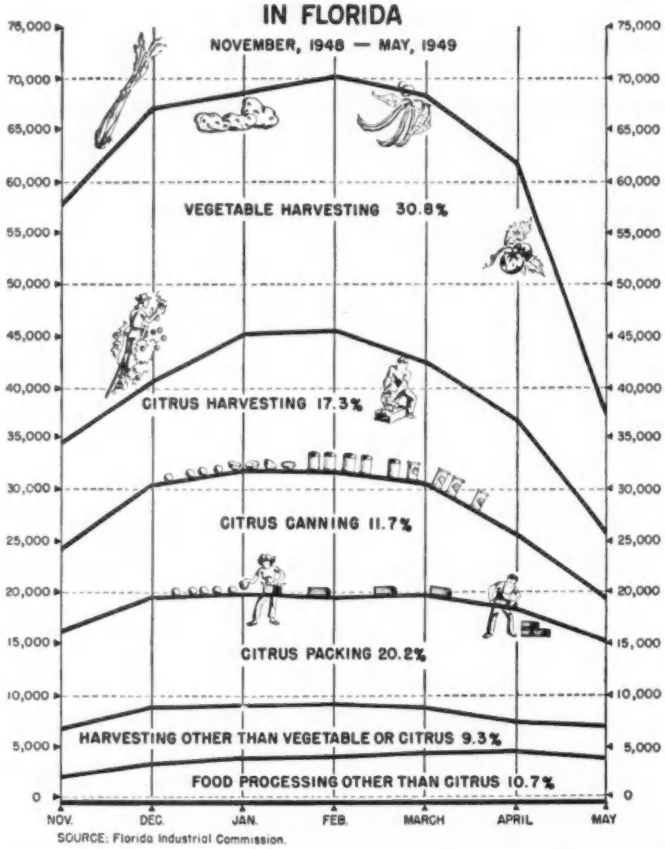
ESTIMATED MONTHLY AGRICULTURAL EMPLOYMENT by ACTIVITY IN FLORIDA



SOURCE: Florida Industrial Commission.

Employment in agricultural and related activities reached slightly over 71,000 at the height of the season despite two hurricanes, two floods, one freeze and an extended drought.

Peak employment last year in these same activities was estimated at 70,000.

Decline in agricultural employment started in mid-February and has continued its downward trend sharply to approximately 37,000 at the end of May.

Out-migration of an estimated 30,000 migratory workers to Seaboard states is occurring at a rapid rate. During the week ending May 20, 8 crews including 3,065 of these workers sought information as they left Florida concerning employment in other states at the Gross Information Station maintained by the Florida State Employment Service.

Citrus activities which account for about half the agricultural and related employment are chiefly in the central and southern sections of the state.

Vegetable harvesting activities, comprising 36 per cent of the agricultural workers, is also in the central and southern sections, with the largest concentration in the Okeechobee Lake area.

Movement of large groups of workers from supply to demand areas within the state during the season was effected by careful planning of the Farm Placement Division of the Employment Service, thereby making it possible for the crops to be harvested without any major losses.

Now that the season is virtually over in Florida, migratory workers are being directed to other employment up the Eastern Seaboard where they will be employed in farm activities until November when the next harvest begins in Florida.

Approximately 31,700 workers were placed in agricultural activities by the Florida State Employment Service from November 1948 - May 1949, an average of 150 a day.

Three Duval County 4-H girls' clubs recently stencilled 261 articles, including towels, aprons, blouses, luncheon cloths, and napkins under the direction of the assistant home agent.

RAILROADS SEEK HIGHER RATES ON CITRUS FRUITS

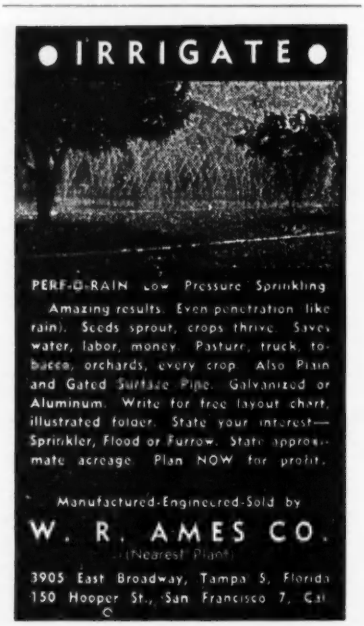
"The rates on citrus fruit moving by Railway Express must be increased at least 10 per cent beginning with next season," C. F. Messenkopf, general traffic manager, Railway Express Agency, told representatives of the Citrus Express Shippers Associatoin at a meeting in Orlando, Florida, recently.

Mr. Messenkopf said that this increase, the amount of which cannot be definitely ascertained until after July 1st, was because of greatly increased operating costs, including a recent wage award to Express employes. This award, it was estimated, will add to the Railway Express expense figure a total of several million dollars a year.

Many other matters concerning the handling of next year's citrus crop by express were discussed with the several express officials present, including W. J. MacGreevy, vice president, Atlanta; K. N. Merritt, vice president, New York; S. F. Pitcher, general manager, Atlanta, and R. H. McGinnes, superintendent of transportation, Atlanta.

It was believed that more express cars would be available for the handling of the 1949-50 citrus crop than were available last year and that the service generally would be greatly improved.

The meeting was called by Gordon Stedman of the Growers and Distributors Association, and the presiding officer was Alvin Voges of the Florida Citrus Express Shippers Association.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Foreign Trade Advisory Committee Urges Long-Range Studies . . .

At a two-day meeting, early in June, the Foreign Trade Advisory Committee under the Research and Marketing Act reviewed the work that has been done by U. S. Department of Agriculture commodity specialists in approximately 50 countries throughout the world to stimulate foreign demand for U. S. farm products usually produced in excess of normal domestic needs.

The committee devoted a large share of its time to problems pertaining to agriculture's long-range or continuing interest in foreign trade. Some of the questions raised and considered of first importance by the advisory group are these:

1. What level of consumption of food and fiber is likely to prevail in countries such as those of Western Europe, and how will this affect plans for export and international programs over a period of years?
2. What international trade in agricultural products may be anticipated over a period of years after ECA, from the standpoint of volume of trade, kinds of products, nature of imports and exports, and related questions?
3. What are the prospects for a restoration of multilateral trade? What effect will this have on agricultural imports to and exports from the United States, and what adjustments will be necessary if such restoration isn't fully achieved?
4. What will be the effects on agricultural imports and exports of varying degrees of restoration of currency convertibility?
5. What conditions are necessary to encourage investment of private American capital abroad, and to what extent will our agricultural export market be maintained as a result of such investment?
6. What international problems may arise from domestic agricultural programs that are or may be adopted, such as stockpiles, price supports, and acreage control?

The Committee further expressed the belief that programs of international cooperation, such as the European Recovery Program, are of fundamental importance to the welfare of this country and to the maintenance of active international trade in the years ahead, but it is essential, they pointed out, to keep clearly in mind the original objective of providing aid for other countries for recovery purposes. The best hope of restoring pemanent export markets of agricultural products, the Committee stated, lies in the ability of foreign countries to retain a position of self-support and involves the development of fair, nondiscriminatory trading with the United States.

Members attending the meeting were: Edward J. Grimes, Minneapolis, Minn., vice president, Cargill, Inc. (Chairman); Victor Acer, Buffalo, N. Y., Spencer-Kellogg and Sons; Douglas W. Brooks, Memphis, Tenn., president Union Compress Co.; O. B. Jesness, St. Paul, Minn., chief, Division of Agricultural Economics, University of Minnesota; W. I. Myers, Ithaca, N. Y., dean, College of Agriculture, Cornell University; Edward J. O'Brien, Jr., Louisville, Ky., Edward J. O'Brien & Co.; Howard W. Selby, Boston, Mass., general manager, United Farmers of New England, Inc.; Jesse W. Tapp, San Francisco, Calif., vice president, Bank of America; Marvin H. Walker, Lakeland, Fla., general manager, Florida Citrus Commission. Allan B. Kline, president of the Farm Bureau Federation, is also a member of the Committee but was unable to attend. Barnard D. Joy, assistant to the RMA administrator, is executive secretary of the Committee.

Children's Home Campaign Four-Fifths of Goal

(Continued from Page 11)

and only appeal that The Society has ever made through all of its forty-seven years of service, for funds for building purposes, and that we mean just what we say in our campaign slogan — that this effort will honestly be "JUST ONCE IN A LIFE TIME."

We implore all who can to send in their gifts promptly to R. V. Covington, our long time treasurer, 1649 Osceola Street, Jacksonville. The "Widows Mite" will be just as welcome as larger gifts from those who can give more.

All names, without amount, will be inscribed on The Permanent "Scroll of Honor" to be placed in the Big Living Room of the New Administration Building, to be completed this fall."

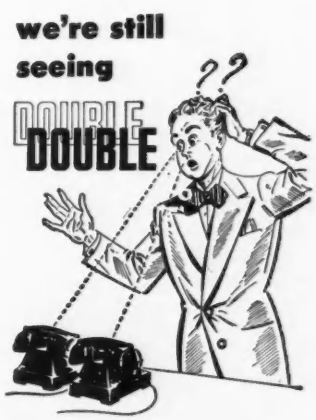
DEAN HUME RETIRES AFTER OUTSTANDING SERVICE TO FLORIDA

Dr. H. Harold Hume, provost for agriculture and dean of the College of Agriculture at the University of Florida and one of the South's outstanding leaders in horticulture, will retire from active duty June 30, according to President J. Hillis Miller.

Dean Hume came to Florida 50 years ago and he has spent more than 20 of those years with the University. His distinguished record of service as a horticulturist includes three outstanding awards, the Jackson-Dawson Memorial award for his work in azalea propagation, the Florida Academy of Science medal and the Arthur Hoyt Scott garden and horticulture award one of the highest honors that can be bestowed in the field of horticulture.

He is the author of several books on horticulture, among which, his work on "Citrus Fruits and Their Culture" has become a standard text and printed in at least four languages.

Dean Hume was Canadian-born and graduated from the Ontario Agricultural College, an affiliate of Toronto University.



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PENINSULAR TELEPHONE COMPANY

19 Renamed To Mutual Board

Nineteen out of 21 Florida Citrus Mutual directors were reelected to office by members in election meetings held in each of the state's seven geographic ctirus districts on June 10.

The only changes were made in District 7, composed entirely of Polk County. Tom B. Swann, of Winter Haven, and Ben Hill Griffin, Jr., of Frostproof, who had said they did not seek reelection, were replaced by George W. Riddel, of Lakeland, and John T. Lesley, of Haines City. Mark C. Dopler, of Lake Wales, was reelected.

About 600 of Mutual's 6000 members turned out for the election meetings, and it was announced that about 20 new grower contracts were signed at the sessions throughout the citrus belt.

District Results

At the District 1 meeting in Tampa, A. Vernon Saurman, of Clearwater; Alonzo B. McMullen, of Tampa, and Dalls J. Simmons of Bradenton, were reelected. Still representing District 2 are J. W. McKethen, of Brooksville; Lacy B. Thomas, of Groveland, and Vernon L. Connor, of Mount Dora.

Reelected in District 3 were Earl W. Brown, of Pierson; W. H. McBride, of Seville, and Harry Tooke, Jr., of Sanford. Reelected in District 4 were C. Walton Rex, of Orlando; A. G. Mann, of Kissimmee, and Dan L. McKinnon, of Winter Garden.

District 5 members reelected A. B. Michael, of Wabasso; J. J. Parrish, Jr., of Titusville, and W. M. Mosely, of Fort Pierce. Reelected in District 6 were Judge Clyde Maddox, of Wauchula; W. S. Fletcher, of Arcadia, and Earl W. Hartt, of Avon Park.

The directors elected or reelected will serve for one year, and will be largely responsible for the carrying out of Mutual's operational plans for next season.

Department of Agriculture Announces Juice Standards . . .

The U. S. Department of Agriculture has announced that U. S. Standards for grades of frozen concentrated orange juice, scheduled for publication in Federal Register June 24, will become effective in 30 days after such publication.

The published standards are based on studies made of frozen concentrated orange juice, concentrated under high vacuum at low temperatures and standardized to 41.5 to 43.5 degrees Brix (technical term for measurement of concentration), without the addition of any ingredients other than fresh orange juice.

This product, the Department reported, packed and handled properly and after being reconstituted by adding three parts of good water to one part of concentrate, reflects color, flavor and body substantially the same as freshly extracted orange juice.

The Department, in establishing these standards, pointed out that there are other types of frozen concentrated orange juice, including a sugar-added type. Sufficient data have not been submitted to justify making provisions for the addition of sugar or incorporating requirements for other types of frozen concentrated orange juice, but the Department will consider making further studies of such other types with a view of developing standards for them if a need is definitely established by the industry concerned, including the interests of consumers.

Fresh Orange Juice Keeps Flavor on Long Trips To Market

Fresh, refrigerated orange juice, prepared and packaged by a new process, is now being shipped commercially from citrus-producing areas to distant markets without loss of flavor or other qualities, the U. S. Department of Agriculture announces.

Ordinarily, orange juice would lose much of its flavor after only a few days in transit and storage. But Bureau of Agricultural and Industrial Chemistry researches at Pasadena, Calif., working in cooperation with citrus processors, have devised a large-scale, commercial method for producing and packing the juice so that it retains good taste quality and vitamin-C content for two weeks or longer. Even after 3 weeks in refrigerated storage, this product is superior to heat-processed canned juice.

Development of the new process, which provides an additional means of moving the country's increasing crop of healthful oranges into economical consumption, was undertaken in 1946 by Dr. E. A. Beavens, in charge of the Bureau's new Pasadena Research Laboratory, and one of his associates, Dr. J. C. Underwood. Most of their work was done at the laboratory maintained by the Bureau until recently at Los Angeles. Object of this research was to find a way to protect the flavor and nutritional quality of fresh, unpasteurized, single-strength orange juice for a period long enough to permit wide distribution.

The method now in commercial use involves careful reaming of the fruit, so that very little peel oil gets into the juice. Too much of this oil will hasten development of off-flavors. The prepared juice is quickly chilled to 30 degrees Fahrenheit and kept at this temperature until used.

Carload lots of fresh orange juice, packed in 1-gallon cans and refrigerated with ice and salt, have been shipped successfully from Los Angeles to New York City. The present production in southern California, which amounted last year to almost 2½ million gallons, is currently distributed to nearer cities. Ten plants of varying size are now using the process on a year-round basis in California. A large part of their output is shipped by refrigerated truck to consumers within a radius of 500 miles.

Additional Information

Strict control of all steps in the process—from selection of fruit through preparation and shipment to final distribution—is necessary to insure the superior quality of this fresh orange juice. The fruit is first thoroughly washed and dried. Cutting and reaming is done very carefully to keep as little peel oil as possible from getting into the juice. Heavy solid particles and seeds are screened out. The juice is then deaerated to remove most of the air it contains and chilled quickly to 30-32 degrees F. It is filled into bottles, cartons, or cans without headspace—that is, to the tops of the containers—and the containers are tightly sealed. The juice must

(Continued on page 18)

Report on Fertilizer Experiments

In An Orange Grove In The Eastern Everglades

W. T. FORSEE, Jr. and T. W. YOUNG*
At Meetting
Florida State Horticultural Society

The Davie citrus area in which these experiments were located, lies on the eastern edge of the Florida Everglades about 10 miles southwest of Ft. Lauderdale. The topography is essentially flat. Drainage is primarily by gravity through a series of lateral canals and two main outlet canals. The water table is held at an approximate average depth of three feet. The surface layer of the soil in most of the area originally consisted of a fibrous sawgress(Everglades) peat from 18 to 24 inches deep. The citrus trees are planted on broad low ridges or beds built up from a mixture of the top soil and the underlying sand. Due to mixing with the sandy subsoil, oxidation of the organic soil and compaction, the mineral content of the surface layer has increased and the depth of the surface layer decreased in proportion to the rate of oxidation of the original peaty material.

The soil of the area selected for these experiments was a Davie fine sand, rather typical of that section. The experiments have been described in previous publications (5) (2). The trees, Lue Gim Gong variety, were set in 1929 and the experimental treatments started in 1934. The grove had received only very small amounts of fertilizer during the five-year interim between planting and establishment of the plots.

The experimental treatments initiated in March, 1934, consisted of applying 16 different fertilizers with varying N-P-K ratios derived from various sources of base materials to triplicate plots. Only one application was made annually in the spring until 1942. Beginning at this time a second application was made in the fall. Occasional supplemental applications of minor elements were made uniformly over the plots. Yield data were taken each year from 1937 to 1945, inclusive. At the end of this period rooting across the middles between trees under different treatments was beginning to occur. This rendered the plots unsatisfactory for further investigations of this kind. Therefore, the experiments were terminated with the 1945 harvest.

The average yearly weight of fruit produced by each tree for the nine harvests is recorded in Table 1. The treatments are listed in the order of their decreasing yields along with columns showing those equal or different at the 5 percent and 1 percent points. Two of the treatments are not included in this discussion because they were changed during the course of the experiment and their yields have no bearing on the over-all results. The effects of treatment on yield may be evaluated from the standpoint of the three elements in the fertilizer that were varied, namely, nitrogen, phosphorus and potassium.

The rates of N in the fertilizers for the various treatments were 0, 3 and 6 percent, derived equally from nitrate of soda, Sulfate of ammonia and caster pomace. The presence or absence of nitrogen in the fertilizer had no effect on yield as is evidenced by the fact that there is no satisfactory yield difference between treatments 2 and 9 or 1 and 8 (Table). The general condition of the trees in the no nitrogen treatments was equally as good as in any other treatment. The trees made good growth. Foliage was normal in size, color, density and total nitrogen content. There was no marked difference in the results obtained from the 3 percent and 6 percent nitrogen treatments where phosphate and potash were held constant. Under the conditions of this experiment, no beneficial results were obtained from nitrogen fertilization. Unpublished data from a nitrogen experiment operated four years in an adjoining grove substantiate these findings. In the latter case the plots were on soil ranging from about 14 to 50 percent organic matter. No increase in yield was secured over no nitrogen from light, medium or heavy nitrogen applications applied at various times throughout the year. This was just as true for the plots on the lowest soil organic matter content as those with the higher content.

Superphosphate was used in the various fertilizer treatments at the rates of 0, 6 and 12 percent. Rock phosphate was used at the rate of 18 percent and colloidal phosphate and basic slag at 6 percent, based on the approximate total P2O5 contents of the source materials. Phosphate treatment had a very decided effect upon yield (Table1). The no phosphate treatments show the lowest production rank for the nine years. Treatments 8 and 9 which received superphosphate at the highest rate during the entire period of the experiment ranked next to the phosphate treatments, 4 and 5. This is perhaps due to the large amount of ammoniation on the high phosphate treatments which probably induced considerable early drop of green fruit. This factor will be discussed later. Yields from the slowly available sources of phosphate were all within the range of the best treatments. Dicalcium phosphate was probably more available than the other insoluble sources on this low PH soil. Rock phosphate was applied at three times the rate of the other materials. This may account for the fact that treatments 11 and 14 ranked higher in yield than treatments 12 and 13.

Treatments containing no phosphate or low amounts of available P2O5 produced fruit with a higher citric acid and thicker rinds. Lack of phosphorus also induced a large amount of preharvest drop and the harvested fruit was soft and graded out a higher percentage of culls. These data are included in Table 2. Fruit from the no phosphate treatments was slightly smaller in size, had a rough, coarse texture, was somewhat elongated with a thick, wrinkled stem end and had a coarse internal structure with large juice casks and a thick core. These differences with phosphate

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The LYONIZER

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Reports Of Our Field Men . . .

POLK COUNTY
J. M. (Jim) Sample

Growers in this territory have completed the movement of their fruit and while shipments during the early part of the season did not bring much money, all of the late varieties brought excellent prices and we have a general feeling of optimism throughout the area. We have completed our Summer application of fertilizer and with the general rains during June most grove properties are in excellent condition. There is a wide variance in the new crop of fruit as to size with some of the early bloom sizing up well and now some trees that suffered badly from the drought have just finished blooming. Rust mite have been very active and scale insects are showing up in heavy infestations. Spraying with oil is being done as rapidly as possible. Due to the extreme drought in many groves we find that there is a great deal of dead wood and many growers are now doing a thorough pruning job.

SOUTHWEST FLORIDA
Eaves Allison

The much needed Summer rains have set in and at this writing, the middle of June, most citrus growers in this area are putting on their Summer application of fertilizer which in most cases had been held up due to the extremely dry condition. Another effect of the long continued dry spell, evident at this time, is the heavy reduction of next year's crop by dropping, plus the great percentage of non-blooming trees and groves. By all signs and portents next year's crop should be a short one in this territory, with resulting beneficial effect of higher prices to the grower. Vegetable and flower growers are working on an easy Summer schedule, overhauling equipment, erecting needed buildings, clearing land and watching their cover crops grow. However, this will all change within the next few weeks as the entire area becomes a bustle of activity for the Fall season.

HILLSBOROUGH & PINELLAS COUNTIES
C. S. (Charlie) Little

It was late in June before this section received sufficient rain to completely forget the necessity of irrigation. While the drought affected the amount of crop we will have next year, we still have a fairly good crop, one of the most serious handicaps under which we have had to go is the delaying of our oil spray program. Scale insects have been very active and in many groves we find plenty of dead wood as a result of scale injury. However, at this time we are putting in long days getting oil applied to all groves. We have completed our Summer application of fertilizer and growers as a whole have used adequate amounts of the proper mixture to produce real quality fruit. We shipped fruit well up to near the latter part of June and growers have been receiving very good returns from their crops. This area is developing into an important watermelon growing area and next year it looks as if the largest acreage ever grown will be planted in the Odessa and other sections.

NORTH CENTRAL FLORIDA
V. E. (Val) Bourland

Considering the extremely dry weather that we experienced this Spring it was expected that we would have a heavy late bloom. However, this did not develop, but in spite of this we are going to have a good crop as we had a nice set of earlier bloom. We have completed our Summer application of fertilizer and growers are now busy controlling rust mite and scale — both of which have been active for the past few months. There is a great deal of dead wood found in a large number of groves throughout the territory and a considerable amount of pruning is being done, but most growers are removing only the large dead wood. Cover crops are making an excellent growth and in many cases chopping will begin within the next several weeks. The watermelon crop was a big disappointment to most growers in the territory with not more than an average yield of 30 to 40 per cent.

WEST CENTRAL FLORIDA
E. A. (Mac) McCartney

With the shipping period over for the season we find that we are in a much different frame of mind than we were at this same time last year. With low prices prevailing over the entire season last year growers had a perfect cause for feeling dejected but with good prices for all late varieties of fruit this year we have seen our growers show a profit for the year's operation, and of course this determines the amount of money a grower can spend on his property. We have just completed our Summer application of fertilizer and as a general rule, a well balanced fertilizer containing ample amounts of secondary plant foods were applied in ample amounts. A great deal of oil sparying is being done at this time to bring upder control a very general infestation of scale insects. At this writing it appears that we are going to have a normal crop of most varieties of fruit and as stated above most growers are doing all possible to have it a real quality crop. Cover crops are in excellent condition.

SOUTH POLK, HIGHLANDS & HARDEE COUNTIES
R. L. (Bob) Padgett

The rains finally came and it is surprising to note the remarkable response that groves have made to water and the Summer application of fertilizer. Many groves that looked as if they could not survive have put on a flush of growth, a new bloom and are now in excellent condition with the exception of dead wood. In fact many non-irrigated groves appear to have equally as much bloom as some of the irrigated properties. While the fruit is smaller on the non-irrigated groves it is expected to develop into good quality fruit. Scale insects are bad in this territory, as I understand they are in other territories of the state, and we are very busy getting these pests under control. The vegetable producing areas of this territory have had an in-and-out season, with some growers having successful seasons while others had their produce come in on a weak market. However, these growers are looking forward to the coming season and hoping for a stable market. Some new land is being cleared for Fall plantings.

PRODUCE
MAXIMUM CROPS
OF
FINEST QUALITY
WITH
LYONS FERTILIZERS

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Now that the shippin' season has practically closed most all of our growers find that they kin close their books without usin' red ink . . . and that citrus fruit from Florida is sellin' just as high and in some cases higher'n fruit from other citrus producin' areas . . . this condition naturally encourages Florida growers to make a real effort to raise quality fruit fer the shippin' season this Fall and next Spring . . . and from our contacts over the citrus area looks like they was goin' to do just that . . . seems to us like all growers is justified in bein' optimistic about the future of Florida citrus.

State and Federal agencies and canners, too, are conductin' research to find new markets for citrus fruit . . . they want to know in just what form the housewives want their fruit and to find the fastest, most economical and safest way to have it reach the consumer . . . with all the new outlets bein' developed for our citrus fruits this hysteria about over production is dyin' down and a spirit of genuine cooperation is developin' in all operations that produce and handle our crop . . . this sort of thing will eventually result in more profitable operations for everybody connected with the citrus industry.

The Lyons Fertilizer Company feels proud to be so closely identified with the citrus, vegetable and flower growers of the State as well as with the cattlemen, and as we close our fiscal year we want everyone of you to know that we are appreciative of the confidence that you have placed in us during the past year, and we assure you that it will be our ambition to supply you in the future with the best fertilizer that known practices will permit us to make. We further assure you that we will keep abreast of all research and practical work that leads to new materials and practices that will make for higher efficiency in fertilizers that are to be used in agricultural production in Florida. We also have a great deal of pride in the ability of our force of field men and you will find on consulting them that in many instances they are able to advise with you in such a way that they can help in increasing production and maintaining quality.

After the Fall and Spring season of hard work by most people connected with the citrus and vegetable industry, the early months of Summer afford a short period of relaxation. We hope that all of us will have this opportunity to get away for a period of time and that when we return we will get started on one of the most successful seasons that we have ever had in Florida.

Uncle Bill

FRESH ORANGE JUICE KEEPS FLAVOR ON LONG TRIPS TO MARKET

(Continued from page 14)

be kept at 30 degrees F. until consumed in order to preserve its fine flavor. This temperature is several degrees lower than that generally maintained in household refrigerators.

Orange juice prepared by this method will retain its flavor and vitamin-C content for 2 weeks or longer under refrigeration. The particles of pulp left in the juice do not settle to the bottoms of containers, and during the short period in which the juice is normally shipped and stored its microbial count (indicating presence of microorganisms, including bacteria) actually decreases if the product is held consistently at 30 degrees F.

Bureau researchers point out that this orange juice must compete with other products now on the market, such as canned juice, the new frozen concentrated juice (developed by Florida Citrus Commission and citrus industry in cooperation with the Bureau's laboratory at Winter Haven, Fla.), and the fresh fruit itself. Main economic advantage of the process is that it enables restaurants and other large users of orange juice to save on costs of preparing this food for their customers. It also assures them of a high-quality product. For the same reasons many food-service establishments are inteested in purchasing peeled potatoes and other partially or wholly prepared foods that relieve them of burdensome overhead and labor costs. In buying these products, users share in the advantages of modern, large-scale, labor-saving devices developed for food processing. Many families, of course, are also interested in obtaining high-quality fresh orange juice ready for consumption.

REPORT ON FERTILIZER EXPERIMENTS IN AN ORANGE GROVE IN THE EVERGLADES

(Continued from page 15)

treatment have been discussed in detail in a previous report (2).

As early as 1941 ammoniation symptoms had become quite evident on treatments 8 and 9 which had received the heaviest superphosphate applications since the beginning of the experiment. The seriousness of this condition increased each year. In 1944 a nutritional spray program including copper was initiated on the entire grove. This practically eliminated ammoniation from the 1945 crop (Table 3).

Since ammoniation is a symptom of copper deficiency, evidence is rather conclusive that the higher amounts of available phosphorus in the soil has interfered with copper assimilation by the trees. The extent and relation of copper deficiency symptoms as evidenced by ammoniation to phosphate treatment in this set of plots has been mentioned by Forsee and Allison (3). Copper analyses made on soil, leaf and fruit samples from certain treatments representing various soil levels of phosphorus supplied from soluble and insoluble sources are recorded in Table 3 along with the percent ammoniation.

The soil analyses for total copper indicate that the trees on the phosphate treated plots had access to as much or more copper than those on the plots receiving no phosphorus. However, as the superphosphate treatment increased the assimliation of copper decreased as is evidenced by the copper contents of the leaves, juice and seeds. Leaf samples from the colloidal and basic slag treatments show copper values intermediate between the no phosphate and the 6 percent superphosphate treatments while samples from the rock phosphate treatment show copper values approximately the same as the 6 percent superphosphate treatments. This correlates with the water soluble phosphorus contents of the soil (Table 3) and indicates that copper assimilation by the tree is inversely proportional to the amount of active phosphorus in the soil.

(Concluded Next Issue)

BRITISH FRUIT SUPPLIES ARE INCREASING

Total supplies of fruit in England are beginning to approach prewar quantities, according to Fred A Motz, U. S. Department of Agriculture marketing specialist, who has been conducting a study of foreign outlets for, and competition with, United States fruit for the Office of Foreign Agricultural Relations. The study was authorized under the provisions of the Research and Marketing Act.

Mr. Motz, who is now in France, says in a preliminary report on the fruit marketing situation in the United Kingdom that the source of England's imported fruit has shifted, the currency situation eliminating United States and Canadian apples which, prior to World War II accounted for about two-thirds of Britain's apple imports. Also, the quality of supplies has dropped, in comparison with prewar standards. British criticism has been voiced regarding the quality of apples imported from certain European countries which, in the absence of normal supplies from the Western Hemisphere, have found a market in the United Kingdom. Fruit importers, handlers and consumers now are expressing interest in renewal of fruit imports from the United States.

Many retail shops in London no longer sell fruit exclusively, and now are handling vegetables and other commodities by reason of business necessity.

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